

Series 21Y

Piezoresistive pressure transmitters in a compact design

Features

- Compensated over the entire temperature range
- Compact design for space-critical applications
- Robust stainless steel housing
- High long term stability

Technology

- Insulated and encapsulated piezoresistive pressure sensor
- Fully welded design with no internal seals
- Direct analog signal path with high bandwidth

Typical applications

- Industrial applications
- Heat pumps
- Air-conditioning technology
- Food industry

Accuracy

± 0,5 %FS

Total error band

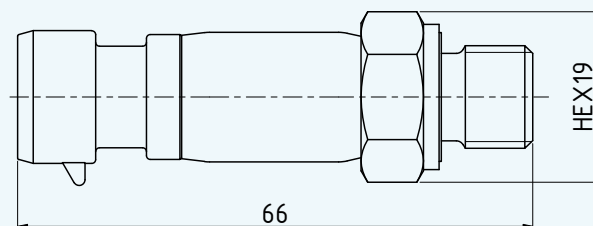
1,5 %FS @ -10...80 °C

Pressure ranges

0...2,5 to 0...1000 bar



Series 21Y



Series 21Y – Specifications

Standard pressure ranges

Relative pressure PR	Relative pressure PR	Proof pressure
0...2,5	-1...2,5	9
0...4	-1...4	12
0...6	-1...6	18
0...10	-1...10	30
0...16	-1...16	48
0...25	-1...25	75
bar rel.		bar
Reference pressure at atmospheric pressure		Based on reference pressure

Absolute pressure PAA	Absolute pressure PA	Proof pressure
0...2,5		9
0...4	0...4	12
0...6	0...6	18
0...10	0...10	30
0...16	0...16	48
0...25	0...25	75
0...40	0...40	120
0...60	0...60	180
0...100	0...100	300
0...160	0...160	
0...250	0...250	500
0...400	0...400	800
0...600	0...600	1200
0...1000	0...1000	
bar abs.	bar	bar
Reference pressure at 0 bar abs. (vacuum)	Reference pressure at 1 bar abs.	Based on reference pressure

Performance

Pressure

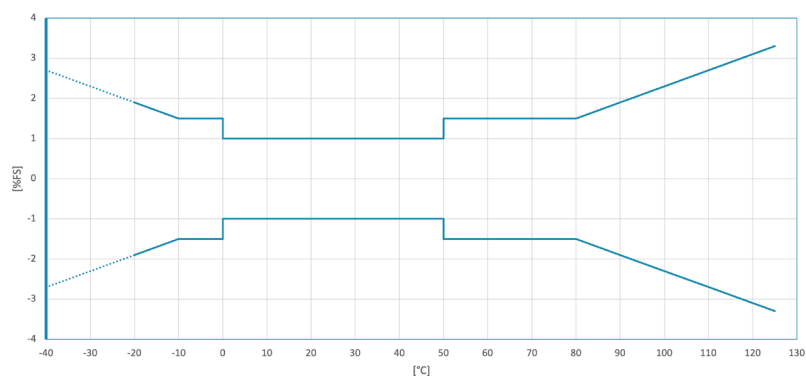
Accuracy	$\leq \pm 0,5$ %FS	Non-linearity (best fitted straight line BFSL), pressure hysteresis, non-repeatability
Total error band 0...50 °C	$\leq \pm 1,0$ %FS	Maximum deviation within the specified pressure and temperature range
Total error band -10...80 °C	$\leq \pm 1,5$ %FS	
Compensated temperature range	-10...80 °C	
Long term stability	$\leq \pm 0,3$ %FS	Per year under reference conditions
Position dependency	$\leq \pm 1,5$ mbar	Calibrated in vertical installation position with pressure connection facing downwards

Total error band

This graph shows the maximum deviation over the entire medium temperature range (-20...125 °C, optional: -40...125 °C) of the 21Y series.

Within the specified pressure and temperature range, the maximum total error has a constant value of $\pm 1,0$ %FS (0...50 °C) or $\pm 1,5$ %FS (-10...80 °C).

Experience shows that outside the specified temperature range, the total error increases linearly by 0,04 %FS/K.



Series 21Y – Specifications

Electrical data

Connectivity	2-wire		3-wire	
	Analog interface	4...20 mA	0...10 V	0,5...4,5 V
Signal output limitation	3,2...22,3 mA	-1,2...11,2 V	0,1...4,9 V	0,1...4,9 V
Voltage supply	8...32 VDC	13...32 VDC	8...32 VDC	8...32 VDC
Power consumption		< 5 mA		< 4 mA

Start-up time (power supply ON)	< 5 ms (0...99 %)
Overvoltage and reverse polarity protection	± 32 VDC
GND-CASE insulation	> 10 MΩ @ 300 VDC

Analog interface

Load resistance	< (U - 8 V) / 25 mA	2-wire
	> 5 kΩ	3-wire
Limiting frequency	1 kHz	

Electrical connection

Plug	M12x1	DIN EN 61076-2-101, A-coded, 4-pin
	mPm-393	DIN EN 175301-803 CI
	Packard plug	Compatible with Metri Pack Series 150 P2S, 3-pin
	GSP	EN 175301-803-A (DIN 43650)
Cable	∅ 3.3 mm, PUR sheath	3-pin / 2-pin

Electromagnetic compatibility

CE conformity as per 2014/30/EU (EMC)	EN 61326-1 / EN 61326-2-3 / EN 61000-6-1 / EN 61000-6-2 / EN 61000-6-3 / EN 61000-6-4
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Mechanical data

Materials in contact with media

Pressure connection	Stainless steel AISI 316L
Pressure transducer separating diaphragm	Stainless steel AISI 316L
Pressure transducer seal (internal)	None
Pressure connection seal (external)	FKM (75 Shore, -20...200 °C)

Other materials

Pressure transducer oil filling	Silicone oil	Others on request
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Further details

Pressure connection	G1/4 male	See Dimensions and options
	G1/8 male	
	7/16-20UNF female	
	7/16-20UNF male	
	1/4-18NPT	
Diameter × length	∅ 16,6 mm × approx. 60 mm	
Weight (excluding cable)	approx. 50 g	

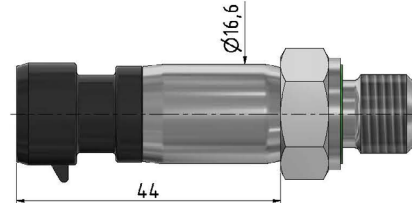
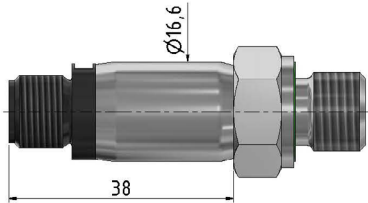
Series 21Y – Specifications


Environmental conditions

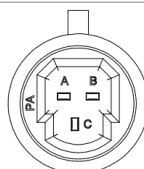
Medium temperature range	-20...125 °C	Optional: -40...125 °C	Icing not permitted
Ambient temperature range	-20...85 °C	Optional: -40...100 °C	
Storage temperature range	-20...85 °C		
Protection	IP67	M12x1	For relative pressure IP54
	IP67	Packard plug	For relative pressure IP54
	IP65	mPm-393	For relative pressure, use a cable with integrated capillary
	IP65	GSP EN 175301-803 A	For relative pressure, use a cable with integrated capillary
	IP54	Cable	
Notes	• Degrees of protection are only valid with the corresponding mating plug in the connected state		
Vibration resistance	10 g, 10...2000 Hz, ± 10 mm	IEC 60068-2-6	
Shock resistance	50 g, 11 ms	IEC 60068-2-27	
Load cycles @ RT (20...25 °C)	> 10 mn. pressure cycles	0...100 %FS	For pressures > 600 bar on request

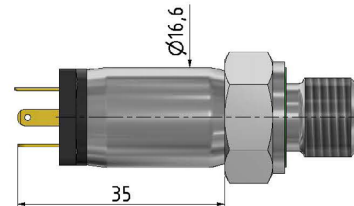
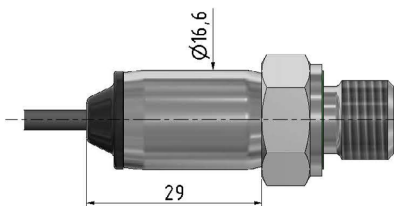
Series 21Y – Dimensions and options

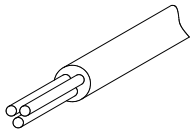
Electrical connections

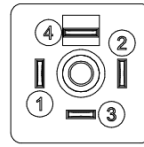


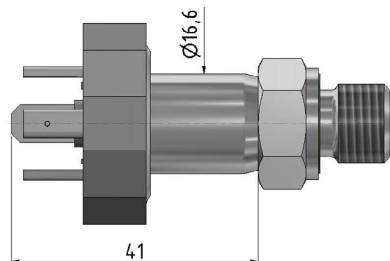
M12	2-wire	3-wire
M12 x 1	4...20 mA	0...max. 10 V
	1 +Vs	1 +Vs
	2 n.c.	2 n.c.
	3 OUT/GND	3 GND
	4 n.c.	4 +OUT


Packard plug	2-wire	3-wire
	4...20 mA	0...max. 10 V
	A n.c.	A GND
	B +Vs	B +Vs
	C OUT/GND	C +OUT



Cable outlet	2-wire	3-wire
Cable ø 3,3	4...20 mA	0...max. 10 V
	WH OUT/GND	WH +OUT
	GN n.c.	GN GND
	BN +Vs	BN +Vs

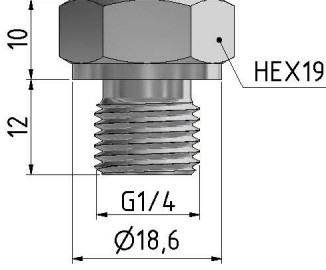
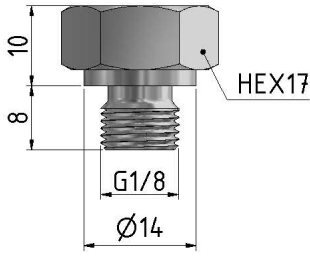
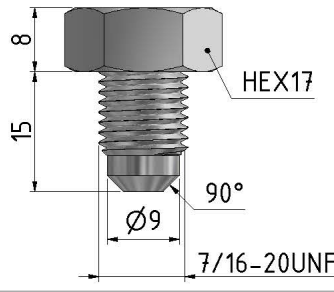
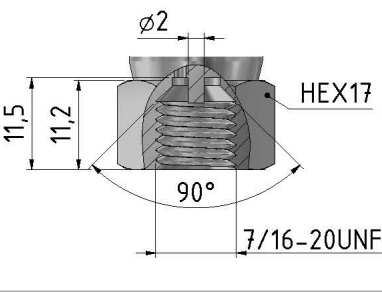
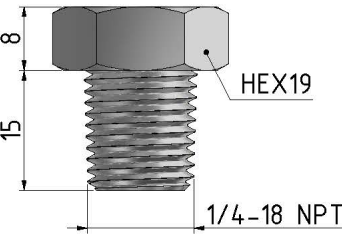
mPm-393	2-wire	3-wire
□ 9,4	4...20 mA	0...max. 10 V
	1 OUT/GND	1 GND
	2 n.c.	2 +OUT
	3 +Vs	3 +Vs
	4 n.c.	4 n.c.



GSP EN 175301-803-A	2-wire	3-wire
□18	4...20 mA	0...max. 10 V
	1 OUT/GND	1 GND
	2 n.c.	2 +OUT
	3 +Vs	3 +Vs
	↓ n.c.	↓ n.c.

Series 21Y – Dimensions and options

Available pressure connections

<p>G1/4 male</p>  <p>DIN EN ISO 1179-2</p>	<p>G1/8 male</p>  <p>DIN EN ISO 1179-2</p>
<p>7/16-20UNF male</p>  <p>ANSI/ASME B1.1</p>	<p>7/16-20UNF female</p>  <p>ANSI/ASME B1.1</p>
<p>1/4-18NPT</p>  <p>ASME/ANSI B 1.20.1</p>	



Other pressure connections available on request.

Other customer-specific options

- Other compensated pressure ranges
- Other electrical connections
- Seal rings made of other materials
- Other oil filling types for pressure transducers: e.g. special oils for oxygen applications
- Modifications to customer-specific applications

Series 21Y – Variants and accessories



Application-specific variants

Air-conditioning technology / HVAC	Oxygen
	
<p>21Y with solder tube connection available for large-volume projects</p>	<p>21Y for oxygen application:</p> <ul style="list-style-type: none"> • maximum nominal pressure 400 bar • maximum temperature 60 °C

Examples of similar products

- Series 23SY: Piezoresistive pressure transmitters for increased requirements and pressure ranges from 0,1 bar
- Series 25SY: Front-flush piezoresistive pressure transmitters for increased requirements
- OEM series: OEM Pressure transmitters (e.g. Series 9LY or 20Y with thread) for installation in own systems

Scope of delivery

Female connector to mPm-393	Female connector to GSP EN 175301-803 A
	

Accessories

Mating plug to M12

<ul style="list-style-type: none"> • Angled socket, cable 2 m PN 602015.0018 • Female connector, cable 2 m PN 602015.0017 • Female connector, cable 5 m PN 602015.0035